Diagnosing organizational cultures: Validating a model and method

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Validating a Model and Method

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January 2006

Abstract

This paper introduces a model of organizational culture developed from a stream of research that has focused on organizational culture and organizational effectiveness (Denison, 1984; 1990; 1996; 2000, Denison & Mishra, 1995; Denison & Neale, 1996, Fey & Denison, 2003). The paper presents a statistical validation of the sixty-item, twelve-index organizational culture survey developed to measure the key constructs in the model, using responses from 35,474 individuals in 160 organizations. The model is based on four cultural traits of organizations: involvement, consistency, adaptability, and mission. Each of these four traits is measured by three five-item indexes.

Confirmatory factor analysis models show good support for the theoretical structure implied by the framework. Within group agreement indicators show a high degree of homogeneity within organization. Finally, a number of significant correlations between culture ratings and measures of organizational effectiveness demonstrate a substantial link between culture and organizations' performance. The paper concludes with a discussion of the potential application of the model and method as an approach for diagnosing organizational cultures.

Research Article

Despite the dominant trend toward qualitative research in the literature, a number of approaches to the comparative measurement of organizational culture have been developed. These examples include Cooke and Rousseau's (1989) approach based upon behavioral norms, O'Reilly, Chatman, and Caldwell's (1991) method for examining person-organization fit, and Hofstede, Neuijen, Ohayv, and Sanders' (1990) extension of Hofstede's research on national cultures to a study of organizations. Each of these approaches developed from a specific research agenda and presents a method for studying organizational cultures by measuring values and behavioral norms. Ashkanasy, Broadfoot, and Falkus (2000) have provided an extensive review of survey measures of organizational culture.

This paper presents an approach to measuring organizational culture that has been developed from a stream of research on culture and effectiveness (Denison, 1984; 1990; 1996; 2000, Denison & Mishra, 1995; Denison & Neale, 1996; Fey & Denison, 2003, Denison, Haaland, & Goelzer, 2004; Denison, Leif & Ward, 2004). This approach has focused directly on those aspects of organizational cultures that appear to influence organizational effectiveness, concentrating on four key traits: involvement, consistency, adaptability, and mission. The focus on these four traits has also been supported by other researchers interested in organizational culture and effectiveness (Kotter & Heskett, 1992; Gordon & DiTomaso, 1992; Sorenson, 2002)

This paper presents a validation of the twelve indexes developed to measure these four traits and the underlying theoretical model. The paper begins by discussing three approaches to measuring organizational cultures that have been presented in the literature. This first section is followed by an overview of the organizational culture model examined in this paper, including a discussion of the conceptual framework and definitions of the traits and measures. The next part of the paper discusses the methods, the sample, and the data analysis plan. The fourth section of

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the paper summarizes the results of the analyses and discusses their implications for the model. The final section discusses the use of this approach for diagnosing organizational cultures.

The Comparative Measurement of Organizational Cultures

Organizational culture researchers have long debated whether cultures can be compared and measured (Denison, 1996; Hatch, 1993; Hofstede, Neuijen, Ohayv, and Sanders, 1990; Martin, 1992; Schein, 1992). Some researchers have concluded that the "deeper" levels of culture such as symbolic meaning, semiotics, and underlying beliefs and assumptions are not subject to comparative analysis and are best understood through clinical or ethnographic methods (Schein, 1992; Van Maanen, 1988). Whereas other culture researchers, while acknowledging the limitations of comparative research for understanding the deeper levels of culture, have persisted in the development of systematic approaches to comparative measurement. Interestingly enough, nearly all of these approaches have developed comparative measurements at the level of values and behavioral norms.

For example, one of the first approaches to be developed (Cooke & Lafferty, 1989; Cooke & Rousseau, 1988) created a published instrument, the Organizational Culture Inventory, which was based on perceptions and expectations regarding behavioral norms. This approach identified twelve cultural styles in three categories: constructive styles, passive/defensive styles, and aggressive/defensive styles. A second approach to the comparative measurement of organizational culture has grown from the work of Hofstede (1980) on national differences in work practices. Working from the set of items and dimensions developed in cross-national research, Hofstede, Bond, and Luk (1993) and Hofstede, Neuijen, Ohayv, and Sanders (1990) have developed a set of six dimensions of organizational culture from a study of 20 Dutch and Danish firms. Their dimensions included process vs. results orientation, employee vs. job

orientation, parochial vs. professional orientation, open system vs. closed system, loose vs. tight, and normative vs. pragmatic.

Comparative measures of organizational culture have also been developed by researchers interested in the socialization and selection of new employees (Chatman, 1991; O'Reilly, Chatman, & Caldwell, 1991). This line of research identified eight dimensions of culture (innovation, attention to detail, outcome orientation, aggressiveness, supportiveness, emphasis on rewards, team orientation, and decisiveness) that were used to assess person-organization fit in a public accounting firm. This method was used to predict the level of satisfaction of new employees and the likelihood that they would leave the firm.

Each of these approaches grew out of a specific research agenda and defined the relevant dimensions of culture in a way that served that research agenda. Each of them also made important contributions to their own line of research and helped to shape the research that followed. Ashkanasy, Broadfoot, and Falkus (2000) have presented an extensive review of eighteen survey measures of organizational culture that shows a wide range of approaches. The model and method introduced in this paper followed a similar process by focusing specifically on the issue of organizational culture and organizational effectiveness and developing an approach to understanding organizational culture that helped to explain differences in the performance and effectiveness of organizations (Sparrow, 2001).

Overview of the Organizational Culture Model

The organizational culture model that is the focus of this paper is based on four cultural traits that have been shown in the literature to have an influence on organizational performance: involvement, consistency, adaptability, and mission (Denison, 1990; Denison & Mishra, 1995; Gordon & DiTomaso, 1992; Kotter & Heskett, 1992; Sorenson, 2002). Each of these traits is

measured with three component indexes, and each of those indexes is measured with five survey items. This section of the paper discusses each of those four traits and provides an overview of the model and definitions of the key concepts and indexes. A complete listing of the items is included in the Appendix. A graphic version of the model is presented in Figure 1.

[insert Figure 1 about here]

Involvement. The research literature has shown that effective organizations empower and engage their people, build their organization around teams, and develop human capability at all levels (Block, 1991; Katzenbach & Smith, 1993; Lawler, 1986; Spreitzer, 1995; 1996; Buckingham & Coffman, 1999). Organizational members are committed to their work, and feel a strong sense of ownership. People at all levels feel that they have at least some input into decisions that will affect their work and feel that their work is directly connected to the goals of the organization. This allows high involvement organizations to rely on informal, voluntary and implicit control systems, rather than formal, explicit, bureaucratic control systems. In the model, this trait is measured with three indexes:

>**Empowerment.** Individuals have the authority, initiative, and ability to manage their own work. This creates a sense of ownership and responsibility toward the organization.

>**Team Orientation.** Value is placed on working cooperatively toward common goals for which all employees feel mutually accountable. The organization relies on team effort to get work done.

>**Capability Development.** The organization continually invests in the development of employee's skills in order to stay competitive and meet on-going business needs.

Consistency. The literature has also shown that organizations are effective when they are consistent and well integrated (Saffold, 1988). Behavior is rooted in a set of core values, leaders and followers are skilled at reaching agreement and incorporating diverse points of view,

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and the organization's activities are well coordinated and integrated (Gordon & DiTomaso, 1992; Martin, 1992; Schein, 1992; Treacy & Wiersma, 1995; Lencioni, 2002). Consistent organizations develop a mindset and create organizational systems that build an internal system of governance based on consensual support. These implicit control systems can be a more effective means of achieving coordination and integration than external-control systems that rely on explicit rules and regulations. These organizations have highly committed employees, a distinct method of doing business, a tendency to promote from within, and a clear set of "do's" and "don'ts." This type of consistency is a powerful source of stability and internal integration. In the model, this trait is measured with three indexes:

>**Core Values.** Members of the organization share a set of values which create a sense of identity and a clear set of expectations.

>**Agreement.** Members of the organization are able to reach agreement on critical issues. This includes both the underlying level of agreement and the ability to reconcile differences when they occur.

>**Coordination and Integration.** Different functions and units of the organization are able to work together well to achieve common goals. Organizational boundaries do not interfere with getting work done.

Adaptability. Despite some of the natural advantages of well-integrated organizations, they can also be the least adaptive and the most difficult to change. Internal integration and external adaptation can be at odds (Lawrence & Lorsch, 1967). Adaptable organizations translate the demands of the organizational environment into action. They take risks, and learn from their mistakes, and have capability and experience at creating change (Katz & Kahn, 1978; Kotter, 1996; Senge, 1990). They are continuously improving the organization's ability to provide value for its customers by creating a system of norms and beliefs that support the organization's capacity to receive, interpret, and translate signals from its environment into

internal systems that increase the organizations chances for survival and growth. Organizations

that are strong in adaptability usually experience sales growth and increased market share

(Denison & Mishra, 1995). In the model, this trait is measured with three indexes:

> **Creating Change.** The organization is able to create adaptive ways to meet changing needs. It is able to read the business environment, react quickly to current trends, and anticipate future changes.

> **Customer Focus.** The organization understands and reacts to their customers and anticipates their future needs. It reflects the degree to which the organization is driven by a concern to satisfy their customers.

> **Organizational Learning.** The organization receives, translates, and interprets signals from the environment into opportunities for encouraging innovation, gaining knowledge, and developing capabilities.

> **Mission**. Successful organizations also have a clear sense of purpose and direction that

defines organizational goals and strategic objectives and expresses a vision of what the

organization will look like in the future (Hamel & Prahalad, 1994; Mintzberg, 1989; Selznick,

1957). A mission provides purpose and meaning by defining a social role and external goals for

the organization. It provides a clear direction and goals that serve to define an appropriate

course of action for the organization and its members. A sense of mission allows an organization

to shape current behavior by envisioning a desired future state. Being able to internalize and

identify with an organization's mission contributes to both short and long-term commitment to

the organization. In the model, this trait is measured by three indexes:

> **Strategic Direction and Intent.** Clear strategic intentions convey the organization's purpose and make it clear how everyone can contribute and "make their mark" on the industry.

> **Goals and Objectives.** A clear set of goals and objectives can be linked to the mission, vision, and strategy, and provide everyone with a clear direction in their work.

Vision. The organization has a shared view of a desired future state. It embodies core values and captures the hearts and minds of the organization's people, while providing guidance and direction.

Like many contemporary models of leadership and organizational effectiveness, this model has focused on a set of tensions or contradictions (Denison, Hooijberg, & Quinn, 1996; Quinn & Cameron, 1988). For example, the trade-off between stability and flexibility and the trade-off between internal and external focus are the basic dimensions underlying the framework. In addition, the diagonal tensions in the model are also important to understand. Internal consistency and external adaptability represent a well-known tension in organizational theory (Lawrence & Lorsch, 1967), while mission and involvement point to the inevitable tensions between top-down direction and bottom-up influence.

At the center of this model in the graph in Figure 1 is underlying beliefs and assumptions. This addition to the model is in recognition of the fact that the "deeper" levels of organizational culture (Schein, 1992) are difficult to measure using comparative methods. Nonetheless, they provide the foundation from which behavior and action spring. Beliefs and assumptions about the organization and its people, the customer, the marketplace and the industry, and the basic value propositions of the firm create a tightly knit logic that holds the organization together. Values and behavioral norms are linked to these underlying assumptions, but it is far more difficult to make comparative generalizations about the underlying assumptions than it is to make generalizations about organizational cultures at the level of values and behavior.

None of the four cultural traits are unique to the model presented in this paper. All of the concepts were developed through a series of qualitative and quantitative studies focusing on the cultural traits of organizations that appear to influence their performance and effectiveness. This set of concepts is also well represented in the broader literature on organizational theory and

organizational behavior. The organizational culture model serves to integrate these concepts, develop a set of valid measures, and then apply them as a basis for a diagnostic process.

Method

This section of the paper describes the methods used in this study. The statistical validation of the culture model began with a large and diverse sample of 35,474 individuals from 160 different organizations. Responses of these individuals to sixty survey items on five-point Likert scales were used to test the relationships between the items and the indexes and to test the fit between the data and the underlying theoretical model. This section gives an overview of the sample and the analysis strategy.

The Sample

The data analysed in this study were selected from a larger archive of over 300 organizations that had voluntarily completed the organizational culture survey between 1997 and 2001. The larger archive consisted of data from both public and private sector organizations. The companies ranged from large *Fortune* 100 companies, to schools and hospitals, to small private companies. The companies were in various industries, including manufacturing, services, high technology firms, public sector firms, and utilities. The sample used for the validity analysis presented in this paper consisted of the subset of organizations in the archive (*n*=160) that were from private sector companies and had more than twenty-five respondents from the organization. Most companies in this sample (74%) were headquartered in North America but Europe, Asia, and the Middle East were also represented in the data set. On average, the 160 organizations employed nearly 60,000 employees and generated almost two billion U.S. dollars in revenue. Table 1 provides an overview of the organizations included in the analysis by location, industry, size, and profits.

[insert Table 1 about here]

The first set of analyses was conducted at the individual respondent level, including a total of 35,474 individuals from the 160 organizations. Intra-organizational response rates within this set of companies ranged from 48% to 100%. The specific samples drawn from each of these organizations were largely determined by the organizations themselves. Some organizations surveyed all members, while others surveyed specific divisions, locations, levels of the organization, or teams. Table 2 presents a description of this broad and diverse set of respondents by age, gender, level of education, and by organizational level and function.[1]

[insert Table 2 about here]

Respondents completed the sixty items measuring the twelve indexes and the four underlying traits in either paper or electronic form. Responses to all items were measured on a 5-point Likert scale that was ranged from 1 ("strongly disagree") to 5 ("strongly agree"). Eight items were phrased negatively and answers were reversed in the analysis. Surveys with missing data on any of the sixty core items were excluded from this analysis. A complete listing of all sixty items by index and trait is included in the Appendix.

Respondents also rated the organization on six dimensions of performance relative to similar companies. Past researchers have demonstrated that subjective measures of organizational effectiveness can be useful proxies for objective sales or profitability data (e.g., Baer & Frese, 2003; Guthrie, 2001; Wall et al., 2004). Organizational effectiveness was measured using the following dimensions: sales/revenue growth, market share,

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[1] The "no response" categories in Table 2 includes respondents from those organizations that opted to use their own set of demographic questions, rather than the standard set.

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profitability/ROA, quality of goods and services, new product development, and employee satisfaction. These were rated on a 5-point Likert scale anchored from "low performer" to "high performer".

Analysis

The analysis for this validation had three phases. Phase One involved examining the psychometric properties of the culture assessment, namely its reliability and validity with respect to the underlying theoretical structure. This phase began by focusing on the relationship between the items and the indexes and examined whether each of the twelve indexes had an acceptable level of internal consistency. Then, confirmatory factor analysis was conducted using the 60 culture survey items to examine the pattern of relationships between the observed variables and latent traits that make up the hierarchical structure of the model and determine the extent to which the parameters implied by the model reproduced the obtained covariance matrix.

Phase Two of the analysis considered the homogeneity of the respondents' ratings in each of the 160 organizations. These results were required as support the existence of an organizational level "culture" and to justify aggregating ratings to the organizational level for further analysis (Dansereau & Alutto, 1990; Klein et al., 2000). Finally, Phase Three examined relationships between the culture indexes and traits and several measures of organizational effectiveness to consider evidence of the criterion-related validity of the culture assessment.

<center>**Results**</center>

Reliability and Validity: Fit with the Theoretical Model

Table 3 presents the results for the first step in the analysis. Included in this table are the means, standard deviations, internal consistency estimates, and item-total correlations for the culture items and indexes examined used in this study.

<center>12</center>

[insert Table 3 about here]

As shown in Table 3, coefficient alphas for the twelve indexes ranged from .70 to .85 indicating an acceptable level of internal consistency for all indexes (Nunnally 1978). Item-total correlations exceeded .50 for over two-thirds of the 60 items in the survey. One item, "problems often arise because we do not have the skills necessary to do the job," shows an unusually low item-to-total correlation of .23, Nonetheless, this negatively-worded item from the capability development index was still retained in the rest of the analysis because a) the alpha coefficient for the index itself still reaches an acceptable level of .70, b) the content validity of the item fits well in the index. Researchers using this scale in the future, however, may wish to exclude this item.

Table 4 presents the correlations between indexes. Between-index correlations ranged from .45 to .74 (average r=.59), indicating moderate to strong relationships between the various aspects of culture.

[insert Table 4 about here]

Next a second-order confirmatory factor analysis was conducted using the 60 culture survey items as observed variables, the 12 indexes as first-order factors, and the 4 traits as second-order factors. Results from this analysis are described first in terms of the pattern of factor loadings and inter-trait correlations, and then by the indicators of fit for the model.

Table 5 displays factor loadings of each of the 60 items on their respective factors. As the table indicates, these loadings were generally in the .60 to .75 range, indicating considerable shared variance within those items intended to measure the same underlying concepts. Tables 6 and 7 present loadings and between-factor correlations at the higher levels of the model. These

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values range from the low .70s to the mid-.90s, indicating overlap in the variance explained by first-order factors and strong relationships between second-order factors.

[insert Table 5 about here]

[insert Table 6 about here]

[insert Table 7 about here]

The fit of this model was evaluated using several fit indices, including the root-mean-square error of approximation (RMSEA; Hu & Bentler, 1998) goodness-of-fit index (GFI; Jöreskog & Sörbom, 1989), adjusted goodness-of-fit index (AGFI; Jöreskog & Sörbom, 1996), and comparative fit index (CFI; Bentler, 1990). The RMSEA is recognized as the most sensitive index to models with misspecified factor loadings (Hu & Bentler, 1998) and is indicative of close fit at values lower than .05 (Browne & Cudeck 1993; Hu & Bentler, 1998; MacCallum, Browne, & Sugawara, 1996). The GFI is analogous to a squared multiple correlation from a multiple regression analysis, assessing the shared variance between the covariance matrix implied by the specified model and the observed covariance matrix. The GFI ranges from 0 to 1 with higher values indicating better fit and values of at least .90 generally considered to be suitable. Bentler (1992) recommended the CFI as the incremental index of choice, as it takes sample size into account when comparing the hypothesized model with the independence model while avoiding problems found with some of the other available incremental indices. A CFI of .90 or greater is typically considered acceptable (Bentler & Bonett 1980; Hu & Bentler 1998). Since this study has an unusually large sample size of 30,808, it seems particularly encouraging that the CFI index indicates a good fit.

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The chi-square and fit indices for this model are shown in Table 8. In general, fit indices indicate close fit for the specified model, with RMSEA (.048) and CFI (.98) values exceeding common guidelines for good fit and GFI (.88) and AGFI (.87) values closely approaching them. These results suggest that the specified model closely approximates the observed pattern of relationships between the items making up the culture assessment.

[insert Table 8 about here]

Table 8 also shows the fit statistics for a first-order factor culture model. In order to determine whether the inclusion of the intermediate first-order factors was an important part of the culture framework's structure, the second-order model was compared to a simpler model that omitted the 12 first-order factors. The second-order model that included the 12 intermediary factors offered superior fit as demonstrated by a lower RMSEA (.048 versus .054), higher values for the goodness-of-fit and adjusted-goodness-of-fit indices (.88 and .87 for the second-order model versus .85 and .84 for the first-order model), and a significantly lower chi-square value, $\Delta\chi^2(12)=34,561.15$, $p<.001$. These results indicate that the second-order factorial model yields a significantly better reproduction of the observed covariance matrix, supporting the conceptualization of a second-order factorial model of organizational culture.

Testing for Homogeneity

Before aggregating individual ratings of culture into an organizational-level variable, it is first necessary to show that those ratings are sufficiently homogeneous to be presented as an organizational characteristic (Klein et al., 2000). There are a number of statistical methods of assessing agreement, such as intraclass correlations, r_{wg} (James, Demaree, & Wolf, 1984), eta-squared, and within-and-between analysis (WABA) (Dansereau, 1995). Of these, the r_{wg} within-

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group agreement index (James et al., 1984) seems to have emerged as the most popular, perhaps because it is so versatile and because it allows for the derivation of a specific agreement value within each group examined rather than a more omnibus comparison of between-group variance to total variance across a number of groups (Klein et al., 2000; Lindell & Brandt, 1999).

Recent refinements in the r_{wg} technique have suggested that the "maximal dissensus" variant, in which the computation is based on a expected response distribution incorporating the upper and lower extremes of the response scale, may be more appropriate than using the uniform response distribution (Lindell, Brandt, & Whitney, 1999). Consequently, within-group agreement was calculated using the maximal dissensus distribution as recommended by Lindell et al. (1999). A common rule of thumb is that within-group agreement indices of at least .70 indicate sufficient response consistency to justify aggregating individual responses to the group level (e.g., George & Bettenhausen, 1990; Judge & Bono, 2000; Klein et al., 2000).

Within-group agreement indices for culture ratings within the 160 organizations as measured by the r_{wg} are displayed in Figure 2. As Figure 2 indicates, all organizations showed agreement levels exceeding the .70 r_{wg} value typically used as a guideline for aggregation. These within-group agreement indices ranged from .77 to .89 (average r_{wg} = .82). Separate r_{wg} indices computed individually for each of the four culture traits yielded very similar results. These findings suggest that the organizational cultures for all 160 of these organizations, as rated by survey respondents, can be construed as agreed-upon organization-level characteristics. These results also suggest that researchers may wish to consider within-group agreement as a variable, giving an indication of the homogeneity of the culture, rather than as an absolute threshold.

[insert Figure 2 about here]

Criterion-Related Validity

Based upon the high level of interrater agreement found in the second phase of the analysis, respondents' culture ratings were aggregated at the organization level in order to examine differences in culture ratings across organizations as well as relationships between culture indexes/traits and organizational effectiveness. Mean culture index ratings and results of a series of ANOVAs comparing between-organization to within-organization index variance are presented in Table 9.

[insert Table 9 about here]

As Table 9 shows, there were large mean differences in culture index ratings among the 160 organizations considered. The largest differences were found for the Empowerment (F[159,35293]=25.32, p<.001) and Coordination & Integration (F[159,35257]=21.62, p<.001) indexes and the smallest for the Customer Focus (F[159,35192]=15.33, p<.001) and Organizational Learning (F[159,35232]=15.89, p<.001) indexes. On average, there was over 19 times as much between-organization as within-organization variance across the 12 indexes.

Once we had established the strength of these organizational differences, we next examined the criterion-related validity of the culture model using respondents' ratings of 6 different dimensions of organizational performance were used as effectiveness criteria. Previous research has supported the idea that subjective measures of organizational effectiveness have acceptable convergent validity with more objective assessments. The two types of measures often correlate in the .40 to .60 range, and even greater magnitudes are found when the two assessments are aligned conceptually (*c.f.* Wall et al., 2004).

[insert Table 10 about here]

Correlations between the culture indexes and traits and respondents' ratings of sales growth, market share, profitability, quality of products and services, new product development, and employee satisfaction are presented in Table 10. As the table shows, most of these validity coefficients were statistically significant at the .01 level and had magnitudes of at least .30. Correlations between aspects of culture and employee satisfaction were the highest, ranging from .42 to .79 (average $r = .63$), whereas they tended to be the lowest with market share (ranging from .04 to .26, average $r = .13$). Culture indexes and traits were more modest predictors of sales growth (average $r = .26$), profitability (.25), quality (.36), and new product development (.37). When the six performance measures were combined into a unit-weighted composite, correlations between the culture indexes/traits and performance ratings ranged from .44 to .68 (average $r = .58$). Overall, these results demonstrate a strong link between aspects of organizational culture and these organizational effectiveness measures.

As in past research, these results also show that some culture measures are better predictors of specific criteria of effectiveness than others (Denison & Mishra, 1995). Sales growth is most strongly correlated with the external focus traits of adaptability and mission, while operating performance measures such as quality and profitability are generally more closely correlated with internal traits such as involvement and consistency. New product development is least strongly correlated with internal consistency, and involvement is clearly the strongest predictor of employee satisfaction.

Discussion

This study has presented a validity test of a model of organizational culture that focuses on four traits of organizational cultures that have been shown in the research literature to be linked to various measures of organizational effectiveness. The validation of this model was

based upon a large and diverse sample of 35,474 individuals from 160 different organizations. The goals of this study were to first establish the psychometric validity of a set of sixty survey items and twelve five-item indexes as measures of the four underlying traits defined by the theoretical model and to then demonstrate the criterion-related validity of culture ratings in predicting organizational effectiveness.

The analysis was conducted in three phases: The first phase provided evidence of internal consistency for the twelve measures and validated the theoretical structure of the assessment. The second phase demonstrated that respondents' ratings of organizational culture, as measured by this assessment, are sufficiently homogeneous to permit their aggregation into organization-level characteristics. The third phase of the analysis established the criterion-related validity of the culture assessment in predicting organizational effectiveness.

Overall, the results from the first set of analyses provide strong support for the validity of the organizational culture survey as a set of measures for the constructs in the theoretical model. Internal consistency reliabilities demonstrated uniformly positive support for the convergent validity of the items comprising the twelve measures. Results from the confirmatory factor analysis showed that the conceptual model of 4 traits each assessed by 3 indexes that are themselves made up of 5 items closely approximated the observed pattern of relationships between item ratings. Further analysis indicated that taking out the 12 index-level factors significantly impairs the fit of the model. Overall, these results provided clear support for the theoretical model and a good fit overall. The model parameters show a set of strong interrelationships among the four traits. These results suggest that these traits are closely interrelated and organizations scoring highly on one of these traits are also quite likely to score

high on the others. The four traits are sufficiently independent to be considered as independent factors, but do appear from these analyses to be quite closely related.

The survey-based measures of organizational effectiveness used in this study give good support to the idea that the culture of an organization is closely related to organization performance. The lack of longitudinal data in this study doesn't allow us to examine the direction of causality at this time. But this general finding suggests that culture may be regarded as a form of social capital which, in principle, should show a "return" over time. Organizational cultures without the traits described in this model, of course, would be more likely to present an organization with a negative return. Future research must consider both the theoretical and empirical implications of viewing culture as a form of social capital (Barney, 1986, Baker, 2000). Full consideration of these issues is beyond the scope of this paper, but now that the measurement foundation is better established, further empirical and theoretical work can proceed.

There are many uses for this model and survey as a diagnostic tool for understanding an organization's culture and the impact that it may have on performance. Consistent with prior research, this study demonstrated that the traits in this model are linked to various aspects of organizational performance. These findings provide a basis for future-oriented inferences – organizations that are weak in mission and adaptability, for example, are unlikely to grow. Organizations that are strong in involvement and consistency are likely to be strong in performance characteristics such as quality control. The database that has been developed for this instrument also allows for the responses of any one organization to be compared to the larger sample to provide normed results that can serve as a benchmark. These links help researchers and managers alike to better understand organizational cultures and the impact that they have. In

an organizational setting, this limited focus on the instrumental aspects of organizational cultures

also helps to legitimate a broader discussion of the deeper levels of organizational culture and the

influence that underlying beliefs and assumptions have on individual behaviors and

organizational systems.

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Table 1: Demographic Characteristics of Organizational Sample

Organizational Category	*n*	% of sample
Country		
Australia	3	1.9
Canada	5	3.1
France	2	1.3
Germany	4	2.5
Great Britain	8	5.0
India	2	1.3
Japan	5	3.1
Netherlands	2	1.3
Norway	1	.6
Sweden	1	.6
Switzerland	8	5.0
United States	119	74.4
Industry		
Basic Materials	23	14.4
Consumer Cyclical	19	11.9
Consumer Staples	22	13.8
Health Care	17	10.6
Energy	1	.6
Financials	17	10.6
Capital Goods	17	10.6
Technology	25	15.6
Pharmaceuticals	1	.6
Communication Services	10	6.3
Utilities	7	4.4
Transportation	1	.6
Employee Population[1]		
Fewer than 1,000	11	7.2
1,000 to 5,000	26	17.0
5,001 to 10,000	12	7.8
10,001 to 20,000	16	10.5
20,001 to 50,000	30	19.6
50,001 to 100,000	28	18.3
100,001 to 200,000	20	13.1
More than 200,000	10	6.5
Organizational Revenue[2]		
Under $100 million	7	5.3
$100 million — $1 billion	17	13.0
$1 billion — $5 billion	35	26.7
$5 billion — $10 billion	14	10.7
$10 billion — $20 billion	15	11.5
$20 billion — $30 billion	18	13.7
$30 billion — $50 billion	14	10.7
More than $50 billion	11	8.4

Note. [1]Information on employee population was unavailable for 7 organizations.
[2]Information on organizational revenue was unavailable for 29 organizations.

Table 2: Demographic Characteristics of Respondent Sample

Demographic Category	*n*	% of sample
Age		
<20	22	.1
20-29	3,006	8.5
30-39	8,034	22.6
40-49	7,680	21.6
50-59	3,650	10.3
>60	283	.8
No response	12,799	36.1
Gender		
Male	14,104	39.8
Female	8,369	23.6
No response	13,001	36.6
Educational level		
High school	2,059	5.8
Some college	3,983	11.2
Associate degree	1,910	5.4
Bachelor's degree	7,231	20.4
Some graduate work	1,894	5.3
Master's degree	4,115	11.6
Doctoral degree	710	2.0
Other	266	.7
No response	13,306	37.5
Function		
Finance and Accounting	2,033	5.7
Engineering	1,863	5.3
Manufacturing and Production	1,928	5.4
Research and Development	1,548	4.4
Sales and Marketing	5,083	14.3
Purchasing	864	2.4
Human Resources	917	2.6
Administration	1,031	2.9
Support staff	1,973	5.6
Professional staff	1,820	5.1
No response	16,414	46.3
Organizational level		
Non-management	9,018	25.4
Line management	4,960	14.0
Middle management	4,765	13.4
Senior management	1,031	2.9
Executive/Senior Vice President	280	.8
CEO/President	71	.2
Owner	12	.0
No response	15,337	43.2
Years with organization		
Less than 6 months	1,042	2.9
6 months to 1 year	1,432	4.0
1 to 2 years	2,315	6.5
2 to 4 years	3,093	8.7
4 to 6 years	2,017	5.7
6 to 10 years	2,952	8.3
10 to 15 years	2,998	8.5
More than 15 years	5,989	16.9
No response	13,636	38.4

Table 3. Alpha Coefficients and Descriptive Statistics for the Culture Survey

Dimension	Index	Item	Item-total correlation	Mean	S.D
Involvement $\alpha = .89$	Empowerment $\alpha = .76$	1	.43	3.94	.81
		2	.59	3.13	1.01
		3	.57	3.11	1.07
		4	.56	3.24	.98
		5	.51	3.13	1.04
	Team Orientation $\alpha = .82$	6	.56	3.53	1.00
		7	.70	3.47	1.02
		8	.61	3.31	1.06
		9	.63	3.46	1.01
		10	.54	3.24	.98
	Capability Development $\alpha = .70$	11	.43	3.39	1.03
		12	.54	3.31	.95
		13	.56	3.45	1.05
		14	.56	3.62	.98
		15	.23	3.30	1.08
Consistency $\alpha = .88$	Core Values $\alpha = .71$	16	.47	3.13	1.03
		17	.39	3.34	.94
		18	.61	3.47	1.01
		19	.36	3.74	.94
		20	.51	3.84	.92
	Agreement $\alpha = .74$	21	.54	3.42	.94
		22	.41	3.50	.94
		23	.60	2.94	.91
		24	.47	3.09	.96
		25	.50	3.15	.97
	Coordination & Integration $\alpha = .78$	26	.43	3.22	1.00
		27	.60	3.03	1.00
		28	.62	2.70	.98
		29	.53	3.01	1.08
		30	.59	3.20	.93
Adaptability $\alpha_3 = .87$	Creating Change $\alpha = .76$	31	.56	2.82	1.04
		32	.53	3.29	.99
		33	.61	3.37	.96
		34	.46	2.82	.99
		35	.48	3.21	.87
	Customer Focus $\alpha = .74$	36	.57	3.34	.91
		37	.60	3.48	.93
		38	.49	3.01	1.03
		39	.53	3.44	1.01
		40	.36	3.57	1.00
	Organizational Learning $\alpha = .74$	41	.52	3.34	.98
		42	.52	3.04	1.04
		43	.46	2.79	1.08
		44	.46	3.73	.93
		45	.56	2.76	1.02
Mission $\alpha_4 = .92$	Strategic Direction & Intent $\alpha = .86$	46	.70	3.63	.99
		47	.51	3.24	.96
		48	.75	3.48	.96
		49	.80	3.44	1.00
		50	.67	3.29	1.15
	Goals & Objectives $\alpha = .80$	51	.60	3.24	.92
		52	.56	3.38	.97
		53	.58	3.70	.86
		54	.56	3.67	.91
		55	.60	3.37	.97
	Vision $\alpha = .79$	56	.63	3.05	.98
		57	.65	3.32	1.00
		58	.41	2.59	.99
		59	.60	3.02	.99
		60	.60	3.10	.93

$N=35,474$.

Table 4. Correlation Matrix for the 12 Indexes of the Culture Survey

Traits	Indexes	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
Involvement	1. Empowerment	3.31	.71	(.76)											
(.89)	2. Team orientation	3.40	.77	.74	(.82)										
	3. Capability development	3.41	.69	.64	.66	(.70)									
Consistency	4. Core values	3.50	.66	.61	.61	.57	(.71)								
(.88)	5. Agreement	3.22	.66	.63	.65	.61	.64	(.74)							
	6. Coordination & Integration	3.03	.73	.61	.63	.55	.57	.65	(.78)						
Adaptability	7. Creating change	3.10	.69	.57	.58	.57	.47	.58	.60	(.76)					
(.87)	8. Customer focus	3.37	.69	.49	.50	.48	.45	.49	.48	.54	(.74)				
	9. Organizational learning	3.13	.71	.65	.66	.65	.58	.66	.63	.65	.54	(.74)			
Mission	10. Strategic direction & Intent	3.41	.82	.58	.58	.58	.58	.57	.58	.56	.50	.61	(.86)		
(.92)	11. Goals & objectives	3.47	.69	.61	.61	.59	.60	.60	.61	.57	.52	.63	.74	(.80)	
	12. Vision	3.02	.73	.60	.60	.60	.57	.61	.62	.61	.52	.68	.73	.71	(.79)

N=35,474. Coefficient alphas are presented on the diagonal in parentheses.

Table 5: First-Order Factor Loadings

Item	Empowerment	Team Orientation	Capability Development	Core Values	Agreement	Coordination & Integration
1	.49					
2	.69					
3	.66					
4	.65					
5	.62					
6		.65				
7		.78				
8		.68				
9		.68				
10		.66				
11			.62			
12			.67			
13			.64			
14			.68			
15			.30			
16				.69		
17				.45		
18				.74		
19				.37		
20				.56		
21					.67	
22					.54	
23					.66	
24					.55	
25					.63	
26						.55
27						.67
28						.67
29						.59
30						.73

N=30,808 (listwise deletion). All loadings are significant at the $p<.01$ level.

Table 5: First-Order Factor Loadings—Continued

Item	Factor					
	Creating Change	Customer Focus	Organizational Learning	Strategic Direction & Intent	Goals & Objectives	Vision
31	.62					
32	.63					
33	.74					
34	.53					
35	.60					
36		.71				
37		.73				
38		.58				
39		.65				
40		.43				
41			.58			
42			.62			
43			.60			
44			.54			
45			.68			
46				.77		
47				.56		
48				.84		
49				.86		
50				.75		
51					.72	
52					.66	
53					.60	
54					.59	
55					.74	
56						.77
57						.73
58						.43
59						.74
60						.64

N=30,808 (listwise deletion). All loadings are significant at the *p*<.01 level.

Table 6: Second-Order Factor Loadings

Factor	Factor			
	Involvement	Consistency	Adaptability	Mission
1. Empowerment	.96			
2. Team Orientation	.94			
3. Capability Development	.92			
4. Core Values		.91		
5. Agreement		.94		
6. Coordination & Integration		.89		
7. Creating Change			.88	
8. Customer Focus			.70	
9. Organizational Learning			.99	
10. Strategic Direction & Intent				.91
11. Goals & Objectives				.97
12. Vision				.97

N=30,808 (listwise deletion). All loadings are significant at the *p*<.01 level.

Table 7: Second-Order Factor Correlations

Factor	Correlation		
	Involvement	Consistency	Adaptability
Involvement	--		
Consistency	.94	--	
Adaptability	.92	.93	--
Mission	.84	.88	.89

N=30,808 (listwise deletion). All correlations are significant at the *p*<.01 level.

Table 8: Model Fit Indices for First and Second-Order CFAs

Model	Chi-square	df	RMSEA	GFI	AGFI	CFI
1st-Order	157,276.98	1704	.054	.85	.84	.98
2nd-Order	122,715.83	1692	.048	.88	.87	.98

N=30,808 (listwise deletion).

Table 9: Descriptive Statistics for the 12 Culture Indexes and Mean Differences Across
Organizations

| Index	Mean	SD	*F*-ratio
Empowerment	3.31	.71	25.32
Team Orientation	3.40	.77	19.99
Capability Development	3.41	.69	18.85
Core Values	3.50	.66	21.31
Agreement	3.22	.66	17.96
Coordination & Integration	3.03	.73	21.62
Creating Change	3.10	.69	16.18
Customer Focus	3.37	.69	15.33
Organizational Learning	3.13	.71	15.89
Strategic Direction & Intent	3.41	.82	20.91
Goals & Objectives	3.47	.69	20.10
Mission	3.30	.67	19.51

N=35,474. All *F*-ratios are statistically significant at the .001 level.

Table 10: Correlations Between Culture Indexes and Measures of Organizational Performance

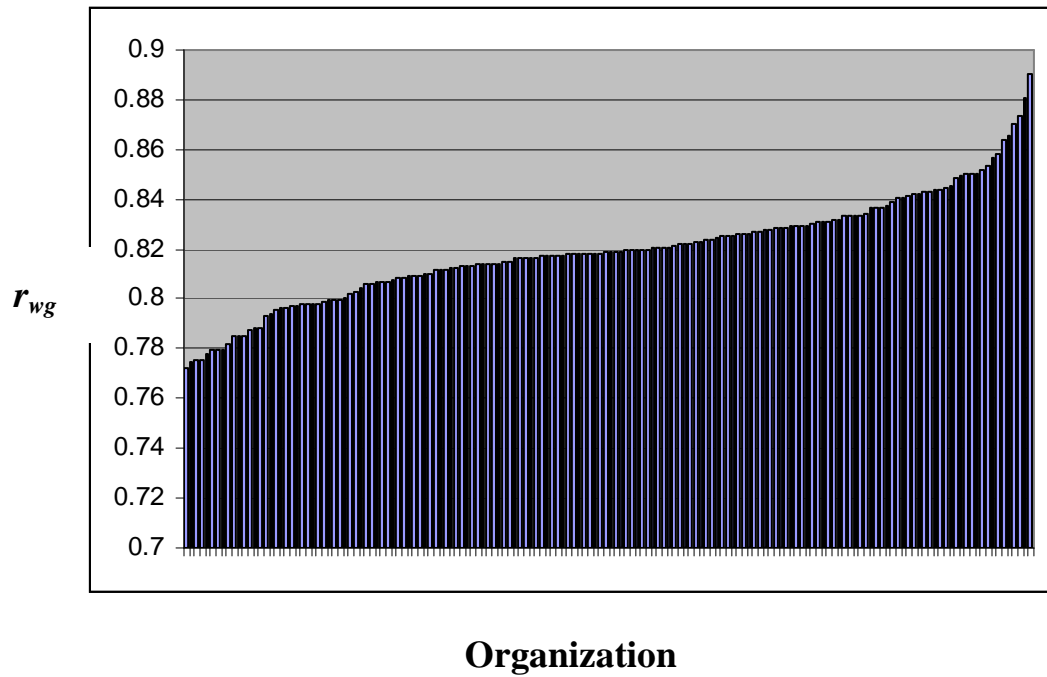|	Performance Measure						
	Sales Growth	Market Share	Profit	Quality	New Product	Employee Satisfaction	Overall
Involvement	**.24****	**.13**	**.23****	**.39****	**.41****	**.79****	**.61****
Empowerment	.20*	.11	.21**	.37**	.36**	.74**	.57**
Team Orientation	.17*	.11	.20*	.32**	.36**	.70**	.51**
Capability Development	.33**	.16	.26**	.41**	.43**	.77**	.65**
Consistency	**.20****	**.12**	**.28****	**.42****	**.26****	**.62****	**.58****
Core Values	.20**	.15	.27**	.36**	.21**	.52**	.53**
Agreement	.26**	.13	.29**	.43**	.32**	.66**	.60**
Coordination & Integration	.11	.07	.21**	.36**	.17*	.53**	.48**
Adaptability	**.29****	**.10**	**.24****	**.34****	**.45****	**.66****	**.60****
Creating Change	.35**	.13	.24**	.31**	.49**	.63**	.57**
Customer Focus	.21**	.08	.16*	.31**	.27**	.42**	.44**
Organizational Learning	.20*	.04	.21**	.27**	.39**	.65**	.54**
Mission	**.36****	**.19***	**.31****	**.38****	**.47****	**.62****	**.68****
Strategic Direction & Intent	.40**	.26**	.32**	.38**	.53**	.55**	.66**
Goal Orientation	.26**	.15	.27**	.35**	.39**	.57**	.60**
Vision	.34**	.10	.29**	.34**	.41**	.66**	.65**

N = 155 (5 organizations did not include the 6 performance items in their survey effort). *p<.05. **p<.01.

Figure 1: The Denison Organizational Culture Model
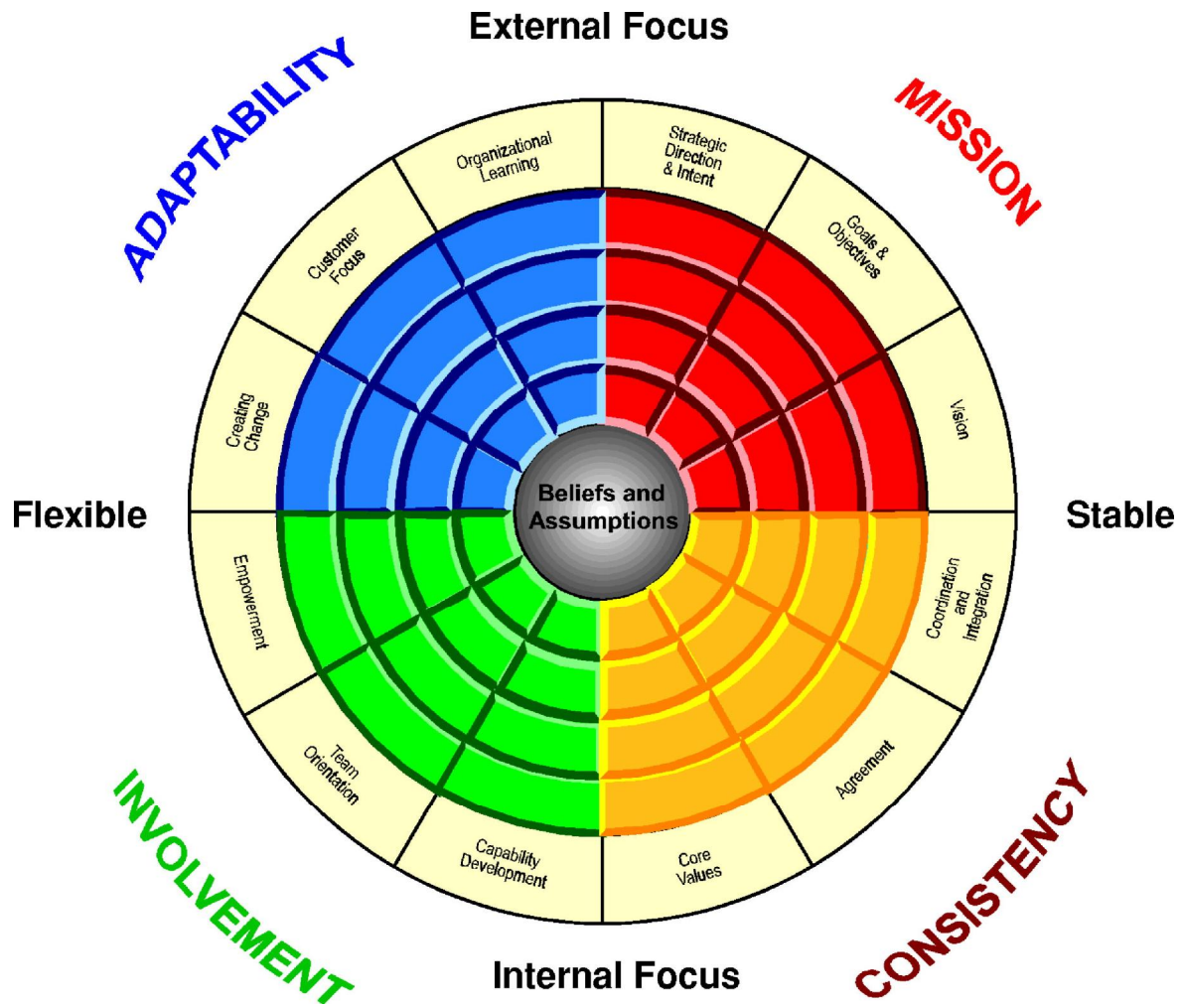
Figure 2: Within-Group Agreement (r$_{wg}$) Values for the 160 Organizations

Organization

Appendix. *Organizational Culture Survey: Items by Index and Trait*

Trait	Index	Item
Involvement	Empowerment	1. Most employees are highly involved in their work. 2. Decisions are usually made at the level where the best information is available. 3. Information is widely shared so that everyone can get the information he or she needs when it's needed. 4. Everyone believes that he or she can have a positive impact. 5. Business planning is ongoing and involves everyone in the process to some degree.
	Team Orientation	6. Cooperation across different parts of the organization is actively encouraged. 7. People work like they are part of a team. 8. Teamwork is used to get work done, rather than hierarchy. 9. Teams are our primary building blocks. 10. Work is organized so that each person can see the relationship between his or her job and the goals of the organization.
	Capability Development	11. Authority is delegated so that people can act on their own. 12. The "bench strength" (capability of people) is constantly improving. 13. There is continuous investment in the skills of employees. 14. The capabilities of people are viewed as an important source of competitive advantage. 15. Problems often arise because we do not have the skills necessary to do the job. (Reversed Scale)

Trait	Index	Item
Consistency	Core Values	16. The leaders and managers "practice what they preach". 17. There is a characteristic management style and a distinct set of management practices. 18. There is a clear and consistent set of values that governs the way we do business. 19. Ignoring core values will get you in trouble. 20. There is an ethical code that guides our behavior and tells us right from wrong.
	Agreement	21. When disagreements occur, we work hard to achieve "win-win" solutions. 22. There is a "strong" culture. 23. It is easy to reach consensus, even on difficult issues. 24. We often have trouble reaching agreement on key issues. (Reversed Scale) 25. There is a clear agreement about the right way and the wrong way to do things.
	Coordination and Integration	26. Our approach to doing business is very consistent and predictable. 27. People from different parts of the organization share a common perspective. 28. It is easy to coordinate projects across different parts of the organization. 29. Working with someone from another part of this organization is like working with someone from a different organization. (Reversed Scale) 30. There is good alignment of goals across levels.

Trait	Index	Item
Adaptability	Creating Change	31. The way things are done is very flexible and easy to change. 32. We respond well to competitors and other changes in the business environment. 33. New and improved ways to do work are continually adopted. 34. Attempts to create change usually meet with resistance. (Reversed Scale) 35. Different parts of the organization often cooperate to create change.
	Customer Focus	36. Customer comments and recommendations often lead to changes. 37. Customer input directly influences our decisions. 38. All members have a deep understanding of customer wants and needs. 39. The interests of the customer often get ignored in our decisions. (Reversed Scale) 40. We encourage direct contact with customers by our people.
	Organizational Learning	41. We view failure as an opportunity for learning and improvement. 42. Innovation and risk taking are encouraged and rewarded. 43. Lots of things "fall between the cracks". (Reversed Scale) 44. Learning is an important objective in our day-to-day work. 45. We make certain that the "right hand knows what the left hand is doing".

Trait	Index	Item
Mission	Strategic Direction & Intent	46. There is a long-term purpose and direction. 47. Our strategy leads other organizations to change the way they compete in the industry. 48. There is a clear mission that gives meaning and direction to our work. 49. There is a clear strategy for the future. 50. Our strategic direction is unclear to me. (Reversed Scale)
	Goals & Objectives	51. There is widespread agreement about goals. 52. Leaders set goals that are ambitious, but realistic. 53. The leadership has "gone on record" about the objectives we are trying to meet. 54. We continuously track our progress against our stated goals. 55. People understand what needs to be done for us to succeed in the long run.
	Vision	56. We have a shared vision of what the organization will be like in the future 57. Leaders have a long-term viewpoint. 58. Short-term thinking often compromises our long-term vision. (Reversed Scale) 59. Our vision creates excitement and motivation for our employees. 60. We are able to meet short-term demands without compromising our long-term vision.

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